

CLAIMS

1. An area image sensor comprising a plurality of image pick-up elements arranged in a matrix including a plurality of element
5 rows and a plurality of element columns;

a plurality of signal lines allocated to a respective one of the element columns; and

a plurality of A/D converters connected to the signal lines, respectively;

10 wherein each of the image pick-up elements belonging to said one of the element columns is connected to only one of the signal lines, and wherein each of the signal lines is connected to at least one of the image pick-up elements belonging to said one of the element columns.

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2. The sensor according to claim 1, wherein each of the image pick-up elements comprises a photoelectric conversion element, and a switching element connected to the photoelectric conversion element.

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3. The sensor according to claim 1, two adjacent image pick-up elements belonging to said one of the element columns are connected to different ones of the signal lines.

25 4. The sensor according to claim 1, further comprising a plurality of address lines and an address line selection circuit connected to the address lines, wherein each of the address lines is connected to the image pick-up elements of a respective one

of the element rows, and wherein the address line selection circuit selects plural ones of the address lines simultaneously.

5 5. The sensor according to claim 1, further comprising a shift register connected to the A/D converters.

6. An area image sensor including a plurality of image pick-up elements arranged in a plurality of columns and a plurality of rows, the area image sensor comprising:

10 a plurality of signal lines allocated to a respective one or two of the columns of the image pick-up elements; and
 A/D converters connected to the signal lines, respectively;

 wherein small groups each consisting of successive image
15 pick-up elements are defined in each of the columns of the image pick-up elements, the number of the image pick-up elements included in each of the small groups corresponding to the number of the signal lines allocated to the column, the image pick-up elements included in each of the small groups being connected
20 to different signal lines from each other;

 wherein large groups each consisting of at least two successive small groups are defined in each of the columns of the image pick-up elements, and wherein, in each of the large groups, there are at least two connection patterns of the image
25 pick-up elements to the signal lines on a small group basis.

7. The area image sensor according to claim 6, wherein, in each of the columns of the image pick-up elements, the number of

the small groups included in each of the large groups is powers of 2.

8. The area image sensor according to claim 6, wherein, two
5 or more kinds of large groups differing from each other in number of the small groups included therein are defined in each of the columns of the image pick-up elements.

9. The area image sensor according to claim 6, further comprising
10 address lines each of which is allocated to a respective one of the rows of the image pick-up elements and connected to all the image pick-up elements of the row, an address line selection circuit for selecting plural ones of the address lines simultaneously, a shift register for taking in digital signals
15 outputted from each of the A/D converters and outputting the digital signals through a plurality of transfer lines, and a duplexer circuit or a multiplexer circuit for switching the transfer lines for outputting the digital signals.

20 10. The area image sensor according to claim 6, wherein the A/D converter compares an inputted signal voltage with a predetermined reference voltage and outputs, to the shift register, a count value when the both voltages correspond to each other as a digital signal.